

FISSICORN TACHINIDAE, WITH DESCRIPTION OF NEW FORMS
FROM AUSTRALIA AND SOUTH AMERICA.

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(Communicated by E. W. Ferguson, M.B., Ch.M.)

(Eight Text-figures.)

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General Remarks.

Smell being the dominant special sense among insects, and its sensory organs being chiefly located in the antennae, these appendages are subject to the greatest modifications. There is, in all the orders except the lower more sedentary forms, the tendency to enlarge the antennal surface, either by increasing the number of the joints or by dilating them, or by adding sensitive hairs, or by the means of ramification or splitting of some parts. These specialisations are usually much more developed in the male than in the female, no doubt because they have some part to play in bringing together the sexes.

In the Diptera this tendency has evolved differently among the three main groups in which the order can be divided.

In the Orthorrhapha Nematocera the so-called fssicorn form is never to be observed, apparently in consequence of the fact that they possess numerous antennal joints (6-40, but usually 6-16), approximately similar to one another and arranged in a linear manner. But in certain families there are often projections on the single joints, to form so-called pectinate or bi-pectinate antennae. Without taking into consideration the elaborate structures of certain Cecidomyiidae (of *Diplosariae* section), and of some Psychodidae (like *Brunettia* Annandale), or Culicidae (like *Lophoceratomyia* Theobald), the pectination reaches its climax among the Tipulidae. It is sufficient to recall the genera *Rhipidia* Meigen, *Gynoplistia* Westwood, *Cerozodia* Westwood, *Ctedonia* Philippi, *Dirhipis* Enderlein, *Scepasma* Enderlein, *Ptilogyra* Westwood, *Phaclocera* Enderlein, *Ozodicera* Macquart, *Dihexaclavus* Enderlein, *Ctenophora* Meigen, *Malpighia* Enderlein, *Xiphura* Brullè, *Dictenidia* Brullè, and *Pseliophora* Osten-Sacken. In other families there is no pectination, but its place is taken always in the male sex by the great development of bushy sensitive hairs, as in the Chironomidae and in the Culicidae; while in the more pedestrian and often gregarious *Nematocera anomala* there is neither pectination nor plumosity.

In the Orthorrhapha Brachycera there are several examples of a pectinate or bipectinate form like that of Tipulidae, as in the Stratiomyid genera *Ptilocera* Wiedemann and *Isomeracera* Enderlein; or in the Xylophagid genera *Rhachicerus*

Walker and *Rhachicerella* Enderlein; or in the Tabanid genera *Elaphella* Bezzi and *Pityocera* Giglio Tos. This is another proof of the pluriarticulation of the antennae of all the Diptera, supported by Wandolleck (1895) and by Williston (1907). But in the main bulk of the Brachycera, the antenna being apparently composed of three differentiated joints with a terminal style, the appearance of a fissicorn form of the third joint (or of the corresponding complex) was rendered possible. This is to be observed in the Stratiomyid genera *Blastocera* Gerstaecker and *Neochauna* Williston, in the Rhagionid genus *Schizella* Bezzi, and is met very frequently in the Tabanidae. It is sufficient to recall the genera *Apocampta* Schiner, *Rhinomyza* Wiedemann, *Tabanocella* Bigot, *Hinea* Adams, *Psalidia* Enderlein, *Thaumastocera* Grunberg, *Stibasoma* Schiner, *Dichelacera* Macquart, *Di cladocera* Lutz, *Isshikia* Shiraki, *Acanthocera* Macquart, *Acanthocerella* Brèthes, *Spheciogaster* Enderlein, and numerous genera recently separated from *Tabanus*. It is very important to note that in all these cases of a splitting of the third antennal joint in the Brachycera, the resulting new parts are always placed at the upper side of the true antenna, that is, of the part which bears the terminal style; and this is connected with the fact that in these Diptera the antennae are carried horizontally or erect. Another thing of importance is that in the Brachycera the presence of sensitive hairs on the antenna is very rare; a pilosity or plumosity of the style is to be observed only in *Lophoteles* Loew, *Rosapha* Walker, *Peratomastix* Enderlein, *Acrochaeta* Wiedemann and in a few other instances among the Stratiomyidae; or in *Ommatius* Wiedemann, *Allocotasia* Schiner and *Emphysomera* Schiner among the Asilidae; or in *Pterostylus* Mik, *Rhagoneurus* and *Paraclius* Loew among the Dolichopodidae; and in *Ptilophyllodromia* Bezzi of the Empididae.

In the Cyclorrhapha Athericera pectination or splitting of the antennae is very rare, the former being even quite absent, perhaps in consequence of the small number of the joints (5-6). This fact must be considered in connection with the very frequent presence in these flies of an abundant and often very elaborate plumosity of the so-called arista (that is, of the distal part of the antenna), as is to be seen in many Syrphidae, chiefly Volucellinae, in numerous Dexiinae and Sarcophaginae, in a great number of Muscidae (where it reaches its climax in the genus *Glossina*), and in numerous Acalyptrata of various groups.

It is necessary to note that this pilosity or plumosity, when present, is equally developed in both sexes (in opposition to what is the case among the Nematocera), and that it is typically wanting only in pedestrian and gregarious forms like many Muscidae and Acalyptrata. An exception to this rule is found only in some Syrphidae and in the true Tachinidae, the latter of which have all a bare arista, but are very often powerful flyers; and it is interesting to note that a fissicorn third antennal joint among Cyclorrhapha makes its appearance precisely in these flies.

The South American Syrphid genus *Masarygus* Brèthes has a true fissicorn antenna in the male, while in the female this organ is regular; moreover, in the male antenna, the arista is quite wanting, a fact never observed in the Tachinidae. In an African genus of the same group, *Ptilobactrum* Bezzi, the third antennal joint is simple but densely plumose, and the arista is vestigial. In the European Trypanid *Ceriocera ceratocera* Hendl, belonging to the Acalyptrata, the antenna of the male appears to be furcate, but this is due to a spinigerous process arising from the second joint, the third one being quite simple. This singular process is apparently of a protective or fighting, not sensory, nature, like the peristomial

appendages of *Elaphomyia*, etc. Singular appendages of the second antennal joint are to be observed in some "Oestrid" genera, like *Gynostigma*, etc.

It is proved that in the Myiodaria the olfactory sense is located exclusively in the antennae; in these flies the third antennal joint has developed into a special olfactory sense organ. Tyler Townsend (1908, pp. 33-34) is of the opinion that the arista has a protective function, as tactile organ with its hairs; and in the forms with bare arista this organ is very moveable, having the basal joints elongated to facilitate the movement. But in comparing the wonderful third antennal joint of *Talarocera* or of *Cryptocladocera* with the very elaborate arista of *Glossina*, it seems that the former with its feathering has evolved in the same way as the latter; and it may be believed that, in view of the irreversibility of evolution, the above named Tachinidae, having lost (like all their allies) the plumosity of the arista, are replacing it by feathering the third antennal joint.

In opposition to what is observed in the Brachycera, the antennae being in the Cyclorrhapha carried apparently pendulous, *the new parts arising from splitting of the third joint are always placed at the underside of the antenna*, that is, of the part bearing the arista. And in contrast with the plumosity of arista, the fssicorn condition is in Tachinidae strictly sexual, being confined to the male; and it is noteworthy that all these fssicorn males have dichoptic eyes.

It must be finally remarked that these remarkable features cannot be considered as anomalies or monstrosities, as believed by some authors, like Strobl and others. It is true that most of the species are known only in a few or even in unique specimens; but several of them have been found in great numbers, like *Dichocera lyrata* Williston, or have been profusely reared, like *Schizotachina vittinervis* Thompson. The phenomenon is, moreover, a general one, having been observed in various groups of the Tachinidae, as well as in all the Zoological Regions of the World, except at present the Ethiopian one.

Historical Account.

The first fssicorn Tachinid species was described in 1830 by Wiedemann (1830, p. 286) from Brazil, under the name of *Tachina nigripennis*, and curiously enough it was a female, the only female as yet known with split third antennal joint. The author is convinced that such an extraordinary form of antenna cannot be considered as a monstrosity, because it is symmetrical.

The first fssicorn Tachinid genus was described by Walker in 1853 (p. 264) under the name of *Schizotachina*, as a subgenus of *Tachina* based on the furcate third antennal joint, with two species from the United States: *Tachina connecta* and *T. exul*, the former being selected by Coquillett in 1910 (p. 604) as type of the genus. These two species have been recorded under the genus *Tachina* by Osten-Sacken (1858, pp. 65-66 and 1878, p. 151), who overlooked the abovenamed subgenus of Walker.

Williston in 1887 (p. 151) described as *Talarocera smithii* from Brazil, the most extraordinary fssicorn Tachinid as yet known.

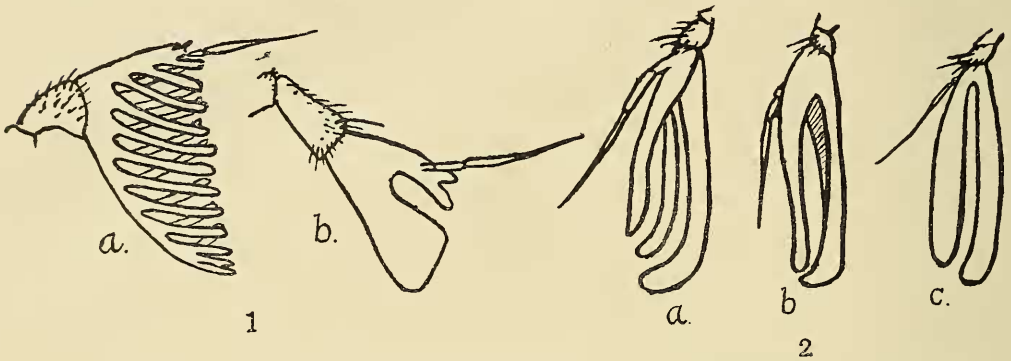
Brauer and von Bergenstamm (1891, p. 383) repeated the characters of the abovenamed species under the erroneous name of *Talarocera*, placing it in the *Tachinoidae*; and the same authors (1893, pp. 91, 146 and 193, note 75) have advanced its probable synonymy with *Tachina nigripennis* Wied.

Tyler Townsend (1892, p. 11) placed the genus *Talarocera* between *Tachinades* and *Archytas*.

Strobl (1894, p. 42) reported to have observed two female specimens of

Thryptocera exoleta Meig. with furcate third antennal joint, and considered this to be an "Abnormitat," three errors in a few words.

Williston in 1895 (p. 29) described another remarkable American form under the name of *Dichocera lyrata*.



Text-fig. 1.—*Talarocera nigripennis* Wied. Antenna enlarged. A. male; B. female. After Williston.

Text-fig. 2.—Male antennae enlarged. A. *Neodichocera tridens* Walt., after Walton; B. *Dichocera lyrata* Will., after Williston; C. *Diglossocera bifida* V.d.W., after Van der Wulp.

In the same year Mik (1895, p. 101) wrote the first general article on fissicorn Tachinidae, discussing the systematic position of some genera, and accepting Strobl's conclusion about the "Abnormitat" of *exoleta* females.

Still in the same year Van der Wulp (1895, p. 89) described and figured a new form, *Diglossocera bifida*, bred in Java from a chrysalis of *Athyma pravara* Moore, and compared it with Williston's *Talarocera*.

In a paper of the same year Brauer (1895, p. 600) recorded for the first time the genus *Schizotachina*, discussing the systematic position of *Talarocera* and of *Dichocera*.

Van der Wulp in 1896 (p. 163), with an additional note on his previous paper of 1895, made some corrections, accepting the conclusions of Brauer; he also (1896a, p. 137) placed the genus *Diglossocera* near *Myobia* in the Tachininae.

Williston (1896, p. 172) has a short but important paper on fissicorn Tachinidae, giving for the first time figures of the antennae of *Talarocera* and accepting the synonymy proposed by Brauer and von Bergenstamm; and (1896a, p. 12) quoted the four genera of fissicorn Tachinidae.

Mik (1896, p. 112), in a second article on fissicorn Tachinidae, discussed the position of *Dichocera*, and advanced the supposition that the two species of *Schizotachina* described by Walker may belong to two different genera on account of the shape of the antennal arista.

Coquillett (1897) has distinguished the two genera *Dichocera* (pp. 33 and 41) and *Schizotachina* (pp. 38 and 41); and in the latter has placed (p. 55) the second species *exul* as a synonym of the first (*connecta*); and, moreover, has described (pp. 137-138) a new species *Dichocera orientalis*, but only female.

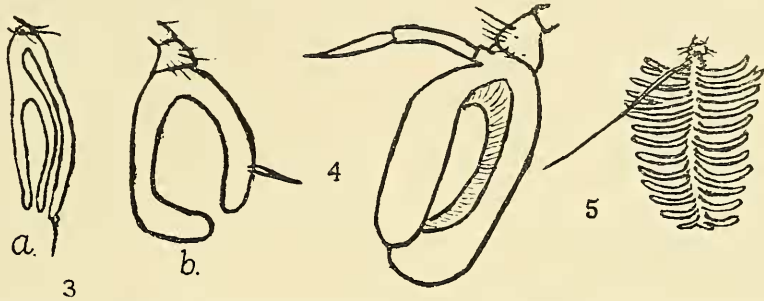
Brauer (1898, p. 521) discussed again the systematic position of *Dichocera*.

Aldrich (1905) recorded all the known North American species, and (p. 481) made some important remarks about *Dichocera lyrata*.

Williston (1908, pp. 30-31) gave important figures of *Talarocera*, chiefly a photograph (fig. 6) of the head of the male, and, on p. 370, figures of *Dichocera*.

Tyler Townsend (1908, p. 66) placed *Dichocera* in the group Pseudodexiidi, and described (p. 85-86) a new genus and species *Acronarista mirabilis* (allied with *Schizotachina*) under the wrong impression that the single specimen was a female.

Strobl (1910, p. 139) gave the name of *Thryptocera fissicornis* to his so-



Text-fig. 3.—Male antennae enlarged. A. *Trischidocera sauteri* Vill., after Villeneuve; B. *Acronarista mirabilis* Tyl. Towns., right antenna of type specimen; original drawing by J. M. Aldrich.

Text-fig. 4.—*Schizotachina vitinervis* Thomps., antenna of male, enlarged, after Thompson.

Text-fig. 5.—*Cryptocladocera prodigiosa*, n.sp. Antenna of male, from front, enlarged; original.

called "Abnormitat" of *exoleta* of 1894, considering it a new species, wrongly believing that the two specimens were females.

W. R. Thompson (1911, p. 268) described and figured a new species *Schizotachina vitinervis*, bred in numerous constant specimens of both sexes from the tineids *Aristatelia roseosuffusella* Clemens and *Paralechia pinifoliella* Chamb. Moreover, he made some additional remarks on *Schiz. connecta* Walk. (p. 271), figuring its wing and recording that it was bred from *Tartrix albicomana* Clem., and also stated (p. 313) that the type of *Acronarista mirabilis* T.T. is a male and not a female.

In 1912, I (p. 123) recorded the fissicorn genera.

Walton (1914, p. 14) described and figured the important new genus and species *Neodichocera tridens* from New Mexico, allied with *Dichocera* but with more elaborate male antennae.

Aldrich (1915, p. 80) gave some records about his collecting of *Dichocera lyrata*.

In the same year Tyler Townsend (1915, p. 119) expressed the doubt that *Schizotachina vitinervis* Thomp. might be the same species as *connecta* Walk., notwithstanding the different wing venation.

Villeneuve (1915, p. 93) described the remarkable new genus and species *Trischidocera sauteri* from Formosa, from three male specimens with trifid antenna.

Finally Tyler Townsend (1916, p. 178), in a preliminary note, proposed the new genus *Dichoceropis* for *Dichocera orientalis* Coquillett; he gave in another publication (1916a, p. 307) the characters of the genus which, however, is not considered in the present paper, because only the female is known, with a simple third antennal joint.

The Genera and their Systematic Relations.

For many years I have had in my collection, without a name, a wonderful Tachinid from South America, which has the male antenna conformed like that of *Talarocera*, but belongs to a different group and is, moreover, of a much smaller size. I will describe it here as a new genus and species under the name of *Cryptocladocera prodigiosa*; and on this occasion I describe also a new species of *Schizotachina* from Australia, recently received through the courtesy of Dr. Eustace W. Ferguson, Sydney. As I have also before me *Dichocera lyrata*, *Schizotachina vitinervis* and *Schiz. fissicornis*, I will give a table of distinction of the known fissicorn Tachinid genera, based only on the shape of the male antenna:

- 1 (4) Third antennal joint divided in numerous (24) and paired branches.
- 2 (3) Third antennal joint prominent and free, with all the branches quite single. *Talarocera* Will.
- 3 (2) Third antennal joint concealed into a deep cavity, with some branches bifid at end. *Cryptocladocera*, n.g.
- 4 (1) Third antennal joint divided in no more than two or three branches, which are, moreover, not paired.
- 5 (8) Third antennal joint divided in three branches.
- 6 (7) The three branches of the third antennal joint are all of about the same length; arista basal and rather long. *Neodichocera* Walt.
- 7 (6) The three branches of different length; arista terminal and very short.
Trischidocera Vill.
- 8 (5) Third antennal joint divided in two branches only.
- 9 (10) The upper of the two branches is much smaller than the lower one and is, moreover, slightly bifid at end. *Talarocera* ♀.
- 10 (9) Both branches of about the same size and both simple at end.
- 11 (14) The two branches of the third antennal joint are juxtaposed, being placed one at side of the other; arista basal.
- 12 (13) Basal joints of the arista short. *Diglossocera* V.d.W.
- 13 (12) Basal joints of the arista elongated. *Dichocera* Will.
- 14 (11) The two branches are superposed, being one in front of the other; basal joints of the arista long.
- 15 (16) Arista basal and of usual length. *Schizotachina* Walk.
- 16 (15) Arista nearly terminal and noticeably short. *Aconarista* T.T.

If we take in consideration the general characters, the above differentiated 8 genera can be disposed as follows:

- 1 (10) Third longitudinal vein and first posterior cell ending considerably before the apex of the wing; hind cross-vein nearer to the bend than to the small cross-vein; forms of the New World only.
- 2 (3) The facial ridges and the very broad parafacialia quite destitute of macrochaetae; eyes bare; frons of the male broad, but without orbital bristles; antennae inserted not much above the middle of the eyes; abdomen destitute of discal bristles; species of very great size. . . *Talarocera* Will.
- 3 (2) The facial ridges or the parafacialia with bristles; eyes always hairy; species of middle size.
- 4 (9) Facial ridges not bristly, but the parafacialia with a row of macrochaetae; ocellar bristles directed forwardly; peristomialia very broad, about as broad as the vertical diameter of the eye; only two sternopleural bristles; bend of fourth vein angular.
- 5 (8) Abdomen with discal macrochaetae on the middle segments.
- 6 (7) Frons of the male with two pairs of strong orbital bristles; only three postsutural dorsocentral bristles; bend with a stump of vein. *Dichocera* Will.

- 7 (6) Male without orbital bristles; four postsutural dorsocentral; bend destitute of stump or wrinkle. *Neodichocera* Walk.
- 8 (5) Abdomen destitute of discoidal macrochaetae on intermediate segments; four postsutural dorsocentral; no apical scutellar bristles; bend not appendiculate. *Dichoceroopsis* T.T.
- 9 (4) Parafacialia without the row of macrochaetae, but the facial ridges with a row of such; ocellar bristles directed outwardly; peristomialia more narrow than the eyes; three sternopleural bristles; three postsutural dorsocentral; abdomen without discal macrochaetae on intermediate segments; bend rounded. *Cryptocladocera*, n.g.
- 10 (1) Third longitudinal vein and first posterior cell ending very near the apex of wing; hind cross-vein nearer to the small cross-vein than to the bend; or about midway between them; eyes always bare; bend always rounded and not appendiculate; species of smaller size, and of the Old World only, or of holarctic distribution.
- 11 (12) Parafacialia with a row of macrochaetae; abdomen with discals on intermediate segments; arista terminal, shortened, with small basal joints; male with very small orbital bristles; cross-veins very approached together. *Trischidocera* Vill.
- 12 (11) Parafacialia without row; abdomen without discal; arista not shortened, basal or subterminal; cross-veins not so approached.
- 13 (14) Frons of the male without orbital bristles; antennae inserted near the middle of the eyes; arista with no distinct basal joints; parafacialia rather broad; small cross-vein near the middle of the discoidal cell. *Diglossocera* V.d.W.
- 14 (13) Frons of the male with two pairs of strong orbital bristles; antennae inserted above the middle of the eyes; arista with elongate basal joints; parafacialia linear; small cross-vein before the middle of the discoidal cell.
- 15 (16) Arista basal and long *Schizotachina* Walk.
- 16 (15) Arista subapical and shortened. *Aconarista* T.T.

Of *Aconaristopsis bahamensis* Tyler Townsend (Insec. inse. menstr., vi., 1918, p. 178) only the female is known; Dr. Aldrich informs me that it is closely allied with *Thryptocera pilipennis* with three veins bristly, and that it is very unlikely that the male when discovered will be found to have a split antenna.

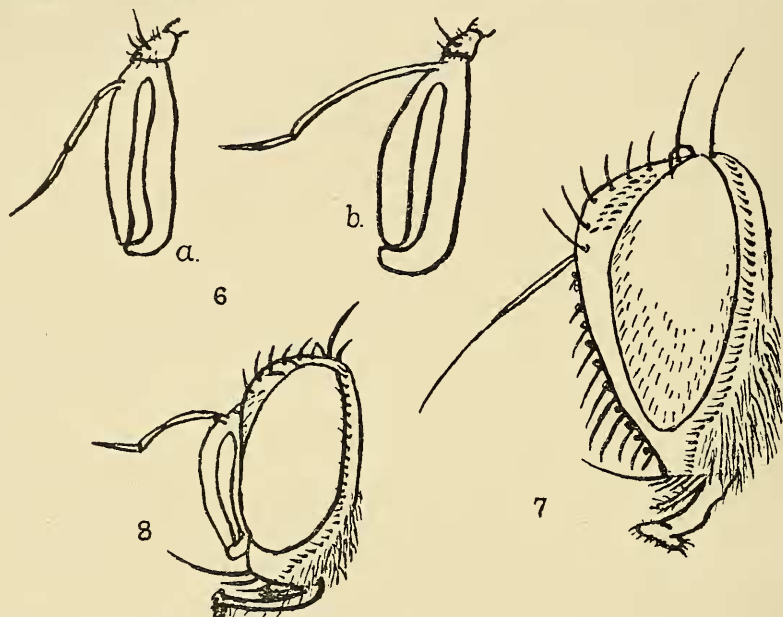
Regarding the systematic position of the above distinguished genera, it seems that *Talarocera* belongs without doubt to the Hystriicinae; *Dichocera* and allies to the Germariinae or to the Baumhaueriinae near *Pachystylum* (notwithstanding the ocellar bristles directed forwardly); *Cryptocladocera* to the Phoroceratinae; and all the remaining genera to the Thryptoceratinae.

The males of the known fissicorn Tachinidae have all a broad frons (with or without orbital bristles), and all have the front legs with small and short claws and pulvilli.

CRYPTOCLADOCERA, n.gen.

Head as broad as the thorax; in front view it is about as broad as high; in lateral view it is much narrowed below, the lower border of the head being very short. Occiput very little convex, with a row of short bristles at eye border, with short bristly hairs above and with dense soft hairs below. Frons of the male moderately broad, only a little narrower than one eye; its sides are about parallel; in lateral view it is prominent on the distal half, but is rounded; it has a row of strong bristles, directed forwardly and descending with three bristles a little below the root of arista; the parafacialia have two rows of rather strong but short setulae (about 8-10 each row), which may be considered as orbital bristles; vertical

bristles long and strong, directed behind; ocellar bristles long, but thin, directed outwardly. Face broadened below, distinctly retreating, forming a broad and deep cavity, in which is enclosed the finely elaborate third antennal joint. Facial ridges completely ciliated with 10-11 strong bristles which are extended to the root of the arista and are curved downwards. Parafacialia narrow and becoming narrower below; they are quite bare. Eyes narrow, their vertical diameter being twice longer than the horizontal one; they are clothed with rather long but not dense hairs. Antennae inserted considerably above the middle of the eyes; basal



Text-fig. 6.—Male antennae enlarged. A. *Schizotachina fissicornis* Strobl, original; B. *Schizotachina fergusonii*, n.sp., original.

Text-fig. 7.—*Cryptocladocera prodigiosa*, n.sp. Head of male, side view, enlarged; original.

Text-fig. 8.—*Schizotachina fergusonii*, n.sp. Head of male, side view, enlarged; original.

joints short and not prominent, bristly, with one more long bristle; third joint (fig. 5) feathered, with the central stem very thin and bearing 12 branches on each side, some of which are bifid at the end and all are finely pubescent; in lateral view only the extreme tips of the external branches are visible on the sides of the facial cavity. The arista is inserted at the extreme base of the stem of the third antennal joint; it is a little longer than the whole antenna, is incrassate in less than the basal half, has no distinct basal joint and is bare. Mouth border not at all prominent, with the long and decussate vibrissae placed exactly at its level. Peristomialia about as broad as long, about one-eighth of the vertical diameter of eye; they are bare, without bristles on middle, but with 2-3 bristles at lower border below the vibrissae. Mouth opening narrow and transverse; palpi normal, filiform, bristly, a little shorter than the proboscis; this latter normal, rather short and thick, with broad terminal flaps.

Thoracic chaetotaxy: 2 + 3 dorsocentral; 3 + 3 acrostichal; 1 + 2 intra-alar; 3 sternopleural, placed in equilateral triangle; 6-7 hypopleural. Scutellum with two pairs of strong lateral, the terminal one stronger and longer; apical pair long and decussate, directed behind; one pair of very small and short discal.

Abdomen cylindro-conical, not broader than the thorax, with 4 visible segments, all of about the same length; no discal macrochaetae on the middle segments. All the sternites concealed. Genitalia enclosed, but rather developed.

Legs normal, with hind tibiae not ciliated; claws and pulvilli of front pair not elongate.

Wings short, without costal bristle; costa very shortly spinulose, with some longer bristles at extreme base. First longitudinal vein ending before the middle of the wing; second straight, ending a little beyond middle distance between ends of first and third vein; third vein ending before the tip of the wing, curved below before the end, with 3 bristles at extreme base above and with 2-3 more small below. Bend of fourth vein rounded but narrow, not appendiculate; first posterior cell ending before the tip of wing and narrowly open; small cross-vein placed on the middle of the discoidal cell. Hind cross-vein oblique, long, rather S-shaped and nearer the bend than to the small cross-vein. Sixth vein long but not reaching hind border. Axillary lobe prominent; alula rounded. Lower calyptrae four times longer than the upper ones, bare on disc.

Type: The following new species.

CRYPTOCLADOCERA PRODIGIOSA, n.sp. ♂.

A fly of modest appearance, looking like a normal Phoroceratine, but with the most extraordinary antenna at present known among the Tachinidae.

Type ♂, a single well preserved specimen in the writer's collection, from Surinam, received many years ago by Standinger.

♂. Length of body 9 mm.; of a wing 7 mm.

Head (fig. 7) entirely black, but densely clothed with whitish dust. Frontal strip as broad as one of the parafrontalia, brownish-black. Parafacialia white shining; peristomialia with reddish-brown spot. Basal joints of the antennae dark yellowish; third joint pale yellowish, both on stem and on branches; its delicate pubescence whitish. Arista dark yellowish, chiefly on the thickened base. Palpi yellowish; proboscis brown, with yellow flaps. Bristles and setulae black; lower occipital hairs white.

Thorax entirely black. On the back it is clothed with dark grey dust and shows two narrow parallel stripes of the ground colour before the suture; the lateral stripes are broader, but less distinct, and are broadly interrupted at suture. Pleurae densely clothed with more whitish dust, unspotted; they are a little reddish at root of wings. Scutellum densely grey dusted, unspotted. All the bristles black; setulae of back likewise black; pleural hairs black, whitish only on pteropleura. Calyptrae white; halteres pale yellowish.

Abdomen with the first segment entirely black and rather shining; the other segments are likewise shining black, but with the basal half densely grey dusted, with whitish reflexions. Setulae and bristles black, the former placed on small black dots. First segment with a pair of macrochaetae in the middle; second with a pair in the middle and one on each side; third and fourth with a complete row at hind border, even the fourth being without distinct discal. Genitalia shining black, with reddish sutures.

Legs black, the tibiae dark reddish-brown, the coxae and the femora with

whitish dust; bristles and hairs black. Front coxae with strong bristles outwardly; middle and hind tibiae with several long bristles on the middle; pulvilli yellowish; claws black, with reddish base.

Wings greyish-hyaline, distinctly darkened on the anterior half, chiefly on the subcostal and marginal cell, and along the first and second longitudinal vein and at base of third. Costa and veins yellowish on the basal part, but blackish on the rest.

Species of the Genus Schizotachina.

This genus is very close to *Actia* R.D. (Gymnoparia, B.B.), being distinguished only by the fassicorn condition of the male, and in the American species by the single bristle at base of third longitudinal vein; the peristomialia are distinctly broader, approaching thus the condition observed in the subgenus *Thryptocera*, *sens str.* of Brauer and Bergenstamm. The North American species are perhaps not congeneric with those from the Old World, which in this case need a new generic name; but I think it better at present to place them in the same genus.

The four known species, three of which are before me, can be distinguished as follows:—

- 1 (4) Third longitudinal vein with only one bristle at the extreme base; sixth longitudinal vein short, always incomplete; New World species.
- 2 (3) Fourth longitudinal vein complete; discoidal cell long, the hind cross-vein being placed much beyond the end of first longitudinal vein; last portion of fifth vein only a little more long than the hind cross-vein.
connecta Walk.
- 3 (2) Fourth longitudinal vein incomplete, missing beyond the bend; discoidal cell short, the hind cross-vein being about below the end of first vein; last portion of fifth vein 3 times as long as the length of hind cross-vein.
vitinervis Thomps.
- 4 (1) Third longitudinal vein with 12-14 bristles, extending to the middle of its whole length; sixth vein longer, sometimes complete.
- 5 (6) Parafacialia rather broad and setulose on upper half; second joint of arista about as long as the first; abdomen quite black; discoidal cell short, the hind cross-vein being placed before the middle of the wing; last portion of fifth vein twice longer than the hind cross-vein; sixth vein reaching the hind border.
fassicornis Strobl.
- 6 (5) Parafacialia very narrow, with only 2-3 hairs above; second joint of arista longer than the third; abdomen broadly red at base; discoidal cell long, the hind cross-vein being distinctly placed beyond the middle of wing; last portion of fifth vein only a little longer than the hind cross-vein; sixth vein ending before reaching hind border.
fergusoni, n.sp.

1. *SCHIZOTACHINA CONNECTA* Walker (*exul* Walker).—The two species of Walker have been placed in synonymy by Coquillett; but Mik was of the opinion that they are different. I have not seen them.

2. *SCHIZOTACHINA VITINERVIS* Thompson.—Certainly different from the preceding, contrary to the opinion of Tyler Townsend. I have in my collection a specimen from the typical lot, numbered 2267 T.

3. *SCHIZOTACHINA FISSICORNIS* Strobl.—Distinguished from *Actia exoleta* Meigen, *inter alia*, by the distinctly broader peristomialia. The species seems to be very rare in Europe; Prof. Strobl has seen only two specimens, one from Styria and one from Tirol; my specimen is also from Austria. Colbran Z. Wainwright informs me that the species has turned up in England, but only a few specimens.

I have not succeeded in finding in the literature the old record mentioned by Mik (1895, p. 42).

4. *SCHIZOTACHINA FERGUSONI*, n.sp. :

Allied with the preceding, but at once distinguishable by the characters given in the key and by the different coloration.

Type ♂, a single specimen from Sydney, 21.11.1920, in the collection of the Microbiological Laboratory at Sydney, N.S.W.; it was collected by Dr. E. W. Ferguson, in whose honour the species is named.

♂. Length of body 3.5 mm.; of a wing 3 mm.

Head (fig. 8) in front view distinctly broader than high. Occiput black, grey dusted, with black postocular cilia and with white hairs below. Frons broad and short, broader than long and distinctly broader than one eye; the middle stripe is pale yellowish, opaque, a little broader than one of the parafrontalia; the rounded ocellar plate is grey; the broad parafrontalia are opaque grey; all the bristles are black, the ocellar directed outwardly, 6-7 interior orbital, 2 of which descend to the root of arista, 2 strong exterior orbital directed forwardly. Eyes bare, of oval shape, their vertical diameter being twice longer than the horizontal one. Antennae inserted at upper corner of the eyes; first joint hardly visible; second joint short, dark reddish, with some black bristles; third joint black, as long as the face and 4-5 times longer than the basal joints; it is divided from the base in two equal branches placed one in front of the other, but the anterior one is a little more outwardly than the other; the posterior branch is longer and thicker, and is curved forwardly below the end of the anterior one. Arista as long as the whole antenna, curved, carried horizontally, inserted at extreme base of the anterior branch of third joint; it is black, with the first joint hardly visible, the second joint very long and thick, distinctly longer than the third joint, which is acute and placed at angle. Face very broad, concave, not carinate in the middle; it is white, like the very narrow parafacialia, which are not broader than the breadth of the arista; they are bare, with only a few small hairs on upper part. Mouth border not prominent; peristomialia about one-fourth of the eye, white, unspotted, bare, margined below with 4-5 bristles, the longer vibrissa placed at border. Palpi very pale yellowish, nearly bare; proboscis thin, with the chitinous terminal part as long as the horizontal diameter of head.

Thorax entirely black, but densely clothed with opaque grey dust; back of mesonotum short and broad, subquadrate, not striped, with black setulae and black bristles; 2 + 3 dorsocentral, but only one of the anterior and one of the posterior developed, the others very small. Pleura entirely grey, unspotted; 2 sternopleural, the posterior one very long. Scutellum one-half as long as the back and coloured like this, with 3 pairs of lateral bristles, the apical one longer and decussate. Calyptrae white, with the lower squama very long and broad, bare above; halteres pale yellowish.

Abdomen with the two basal segments reddish yellow, with a shining black spot in the middle; the two last segments shining black; 2nd, 3rd and 4th segment, moreover, with a narrow transverse band of white dust at extreme base. Venter reddish-yellow at base, shining black at end; genitalia black, enclosed. First segment without macrochaetae; second segment with one pair in the middle and one on each side; third and fourth segment with a complete row; there are no discoidal at all, even on the last segment.

Legs with reddish coxae and reddish trochanters; femora black, those of the front pair with narrowly reddish tip, those of the hind pair with reddish base;

tibiae reddish; tarsi black, with narrowly reddish base; claws and pulvilli very short, the former black, the latter whitish; hairs and bristles black.

Wings short, without costal bristle; they are greyish-hyaline, with dark yellowish veins, which are more blackish towards end. Costa setulose at base. First longitudinal vein short, ending much before the middle of the wing, bare; second vein straight, its distance at end from the first being twice as long as the distance from the third; third vein straight, with 12-14 long bristles from base to beyond middle of its own length, ending at tip of wing; first posterior cell ending at tip of wing, almost closed at border. Small cross-vein placed before the end of the first vein and before the middle of the discoidal cell. Bend of fourth vein rounded. Discoidal cell rather long, the hind cross-vein being distinctly placed beyond the middle of the wing; the distance between the two cross-veins is about twice as long as the length of hind cross-vein. Fifth vein bare, extended to the hind border, with the last portion $1\frac{1}{2}$ longer than the hind cross-vein. Sixth vein not reaching hind border. Third posterior cell very broad, and axillary cell one-half as broad as it; alula rounded.

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